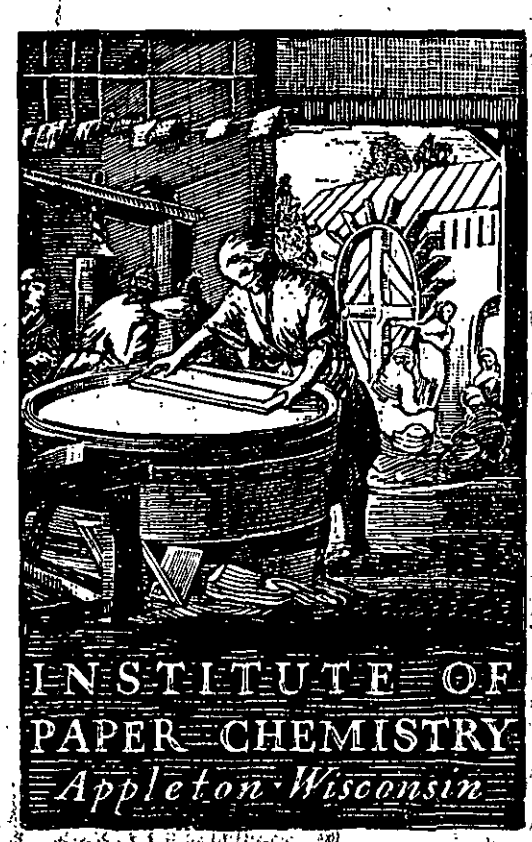

Institute of Paper Science and Technology
Central Files

CONTINUOUS BASELINE STUDY

Project 1108-13

Progress Report 121

to

FOURDRINIER KRAFT BOARD INSTITUTE, INC.

August 1, 1957

THE INSTITUTE OF PAPER CHEMISTRY

Appleton, Wisconsin

CONTINUOUS BASELINE STUDY

Project 1108-13

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FOURDRINIER KRAFT BOARD INSTITUTE, INC.

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THE INSTITUTE OF PAPER CHEMISTRY

Appleton, Wisconsin

In conjunction with the F.K.I. Continuous Baseline Study, The Institute of Paper Chemistry has been directed to identify the participating mills by means of a scrambled system of code letters. Under this system, which was initiated in Progress Report 105, each mill is identified by a code letter different from that used for the previous month.

During the period from July 1 to July 31, seventy different sample lots of 42-lb. Fourdrinier kraft linerboard were submitted by sixteen different F.K.I. mills to The Institute of Paper Chemistry for testing. A tabulation of the number of samples classified according to mill may be seen in Table I.

TABLE I

DISTRIBUTION OF 42-LB. LINERBOARD SAMPLES

Mill Code	Samples Submitted
A	2
B	3
C	0
D	0
E	1
F	3
G	9
H	4
I	4
J	6
K	1
L	6
M	4
N	3
O	8
P	5
Q	2
S	9
Total	70

These sample lots were tested for basis weight, caliper, bursting strength, and Elmendorf tear. The average strength results for each mill may be seen in Table II and are graphically presented in Figures 1 to 5. In addition to a comparison of the mill averages for the various tests, Table II also shows the current F.K.I. averages, the cumulative F.K.I. averages, and the F.K.I. indexes. The cumulative F.K.I. average is based on the results for the previous twelve months excluding the current period. Hence, in the case of the current report, it covers the period from July 1, 1956 to June 30, 1957. The F.K.I. indexes are obtained as follows:

$$\frac{\text{current F.K.I. average}}{\text{cumulative F.K.I. average}} \times 100 = \text{F.K.I. index (\%)}$$

The F.K.I. index provides a ready means of comparing the current quality with previous results. For example, the current F.K.I. average basis weight is 42.8 lb., and the cumulative F.K.I. average basis weight is 43.1 lb. Hence, the index for basis weight determined in per cent as indicated above is 99.3. This signifies that the current average basis weight is slightly lower than the cumulative average.

A comparison of the results in Table II and Figure 1 shows that the average basis weight results for all mills except E, F, and J conform to the 42-lb. specification set forth in Rule 41. Mill P had the highest average basis weight, it being 44.0 lb. or approximately 4.8% higher than the 42-lb. specification. On the other hand, Mill F had the lowest average basis weight, it being 41.5 lb. or 1.2% lower than the 42-lb. specification.

The amount by which the mills vary from the 42-lb. specification is as follows:

Mill Code	Per Cent
A	+3.8
B	+0.5
C	--
D	--
E	-0.5
F	-1.2
G	+2.6
H	+3.8
I	+3.1
J	-0.5
K	+1.0
L	+1.0
M	+1.0
N	+2.1
O	+3.1
P	+4.8
Q	+1.4
S	+4.3

A comparison of the average basis weight data for the previous period with the current F.K.I. average indicated that the basis weight results have decreased slightly from 43.1 lb. to 42.8 lb.

A comparison of the average caliper values for the various mills (see Figure 2) shows that the mill averages vary from a low of 10.9 points for Mill F to a high of 14.0 points for Mill L. The current F.K.I. average is 12.5 points, which is slightly lower than the cumulative F.K.I. average of 12.7 points.

The average bursting strength values obtained for each mill are graphically presented in Figure 3. It may be observed in Table II

and Figure 3 that the average bursting strength values for the various mills range from a low of 104 for Mill Q to a high of 118 for Mill I. The current F.K.I. average bursting strength is 112 p.s.i. g., slightly higher than the cumulative F.K.I. average of 110 p.s.i. g. as indicated by the F.K.I. index of 101.8%.

A graphic comparison of the Elmendorf tear results for the various mills is given in Figures 4 and 5. The data of Table II show that Mill H had the highest average machine direction tear value of 363 units whereas Mill P had the lowest value of 288 units. It may be noted also that Mill E had the highest cross-machine direction tear value of 404 units and Mill A had the lowest value of 346 units. It may be noted that the current F.K.I. machine and cross-machine direction tear averages are slightly lower than the corresponding cumulative F.K.I. averages.

A comparison of the F.K.I. indexes indicates that, for the current period, the current F.K.I. averages for basis weight, caliper, machine and cross-machine direction tear are slightly lower than the corresponding cumulative F.K.I. averages, whereas the current F.K.I. average for bursting strength is somewhat higher than the cumulative average.

In order to compare the variation within a given mill, the test results for each particular mill have been tabulated in Tables III to XX for Mills A to S, respectively.

The results obtained on the special drum stock are presented in Table XXI.

In addition to the current and cumulative averages, the mill factor and mill index are given for each mill. The cumulative mill average is the average test result obtained on the samples submitted by the particular mill for the previous twelve months excluding the current period. The mill factor and the mill index are obtained as follows:

$$\frac{\text{current mill average}}{\text{cumulative mill average}} \times 100 = \text{mill factor (\%)}$$

$$\frac{\text{current mill average}}{\text{cumulative F.K.I. average}} \times 100 = \text{mill index (\%)}$$

The mill factor and the mill index are a convenient means for comparing the current mill results either with the previous results for that particular mill or with the cumulative F.K.I. results. The reports also present a comparison of the test data obtained at the mills with test data obtained at The Institute of Paper Chemistry. These test data are presented and discussed on subsequent pages of this report.

It may be noted in Tables III through XXI that the test data include information about the sheet finish. The summarized results for the mills which submitted sample lots during the current period are as follows:

Mill Code	No. of Sample Lots W.F.	D.F.	Misc.
A	2		
B	3[a]		
C	No samples submitted.		
D	No samples submitted.		
E	1		
F	3[a]		
G	9		
H	4		
I	4[a]		
J	6		
K	1		
L	6		
M	4[a]		
N	3[a]		
O	8		
P	5		
Q	2		
S	9		
R[b]	No samples submitted.		

[a] One side only.
[b] Drum linerboard.

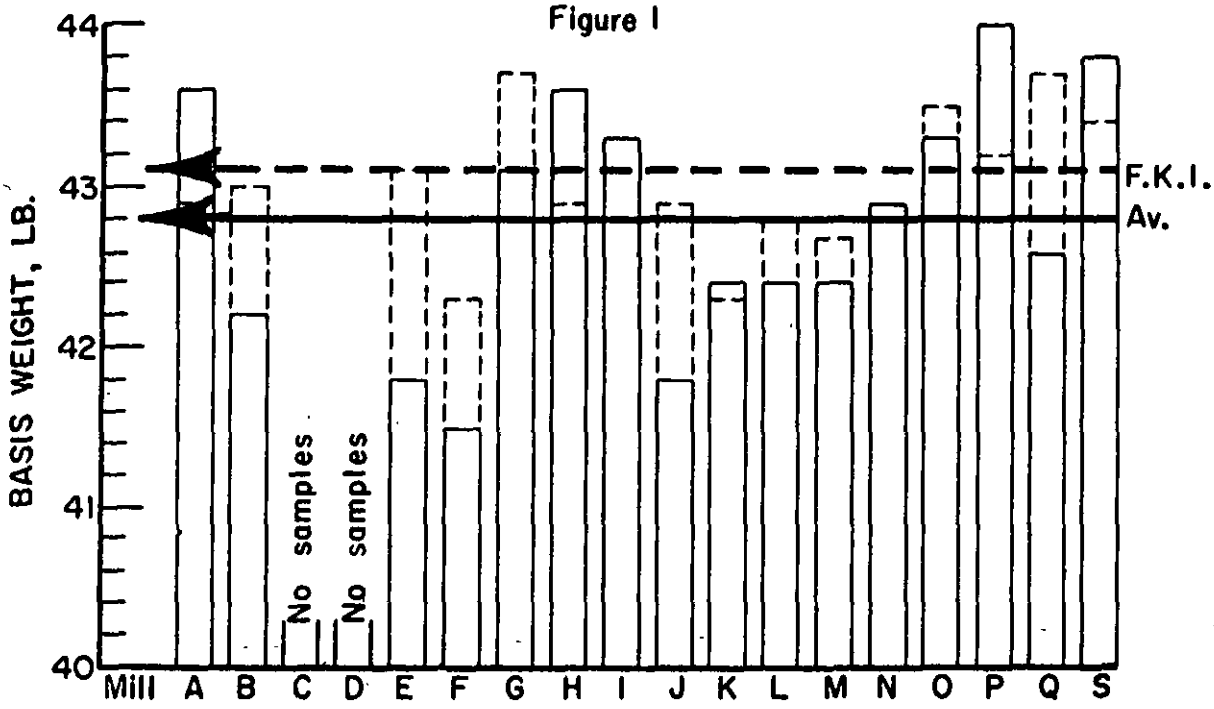
The results indicate that all participating mills are using a water finish on their 42-lb. linerboard.

TABLE II

SUMMARY OF COMPOSITE MILL AVERAGES--JULY 1 THROUGH JULY 31, 1957

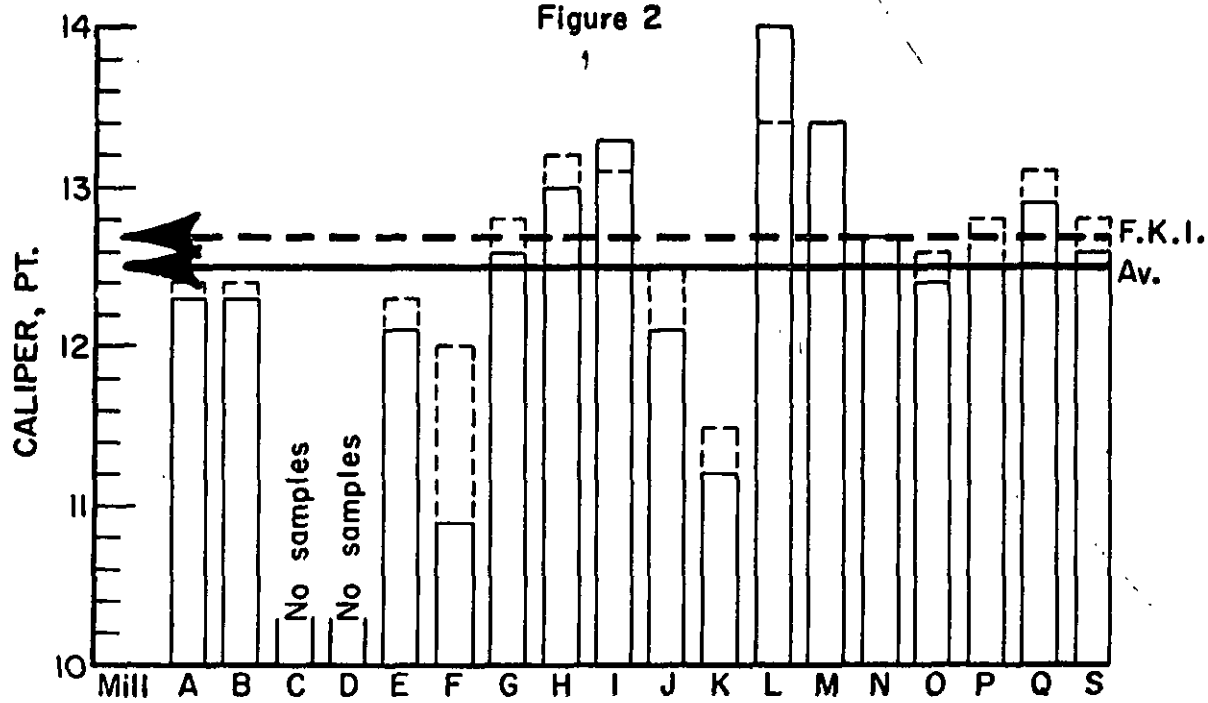
Mill	Basis Weight, lb.	Caliper, points	Bursting Strength, p.s.i. gage	Elmendorf Tear, g./sheet	
				In Machine	Cross Machine
A	43.6	12.3	109	327	346
B	42.2	12.3	109	320	367
C	No samples submitted.				
D	No samples submitted.				
E	41.8	12.1	110	346	404
F	41.5	10.9	111	324	371
G	43.1	12.6	110	355	376
H	43.6	13.0	111	363	372
I	43.3	13.3	118	342	372
J	41.8	12.1	116	308	361
K	42.4	11.2	112	332	367
L	42.4	14.0	113	305	371
M	42.4	13.4	110	344	368
N	42.9	12.7	112	313	378
O	43.3	12.4	114	302	360
P	44.0	12.5	111	288	349
Q	42.6	12.9	104	359	372
S	43.8	12.6	117	352	382
Current FKI Average:	42.8	12.5	112	330	370
Cumulative FKI Average:	43.1	12.7	110	337	372
FKI Index, %	99.3	98.4	101.8	97.9	99.5

Figure 1



COMPARISON OF BASIS WEIGHT RESULTS
(Period July 1 - July 31, 1957)

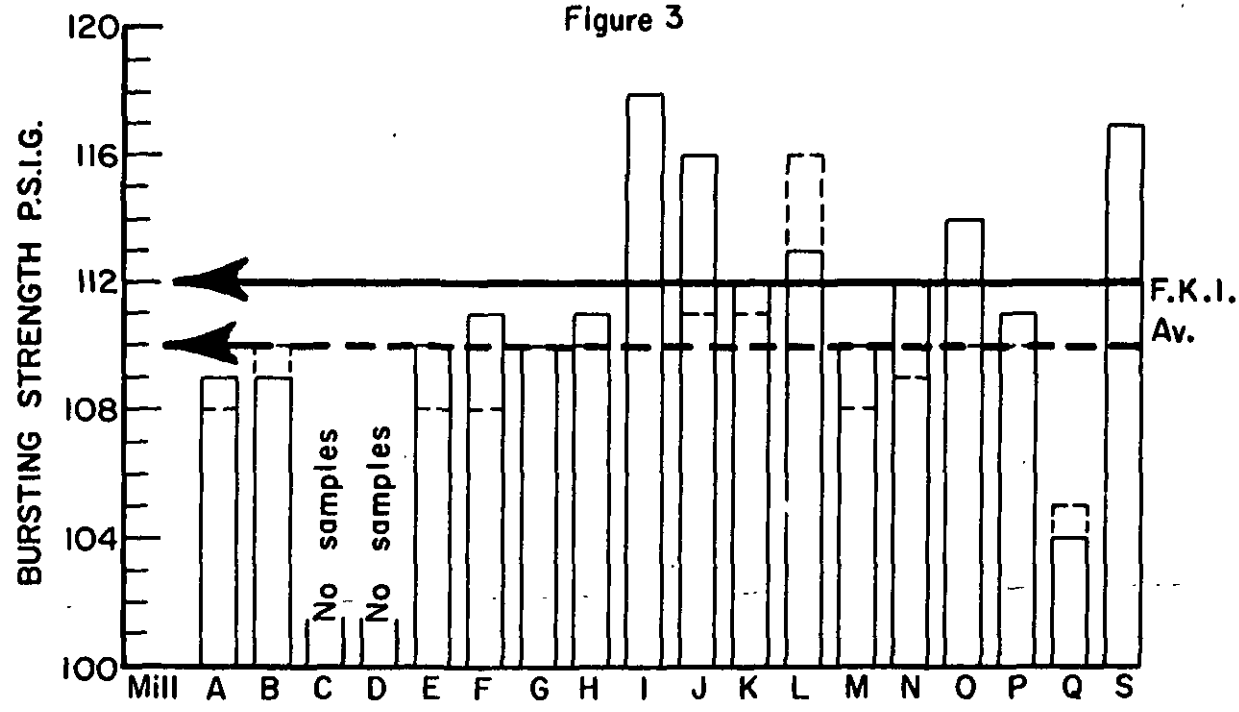
Figure 2



COMPARISON OF CALIPER RESULTS
(Period July 1 - July 31, 1957)

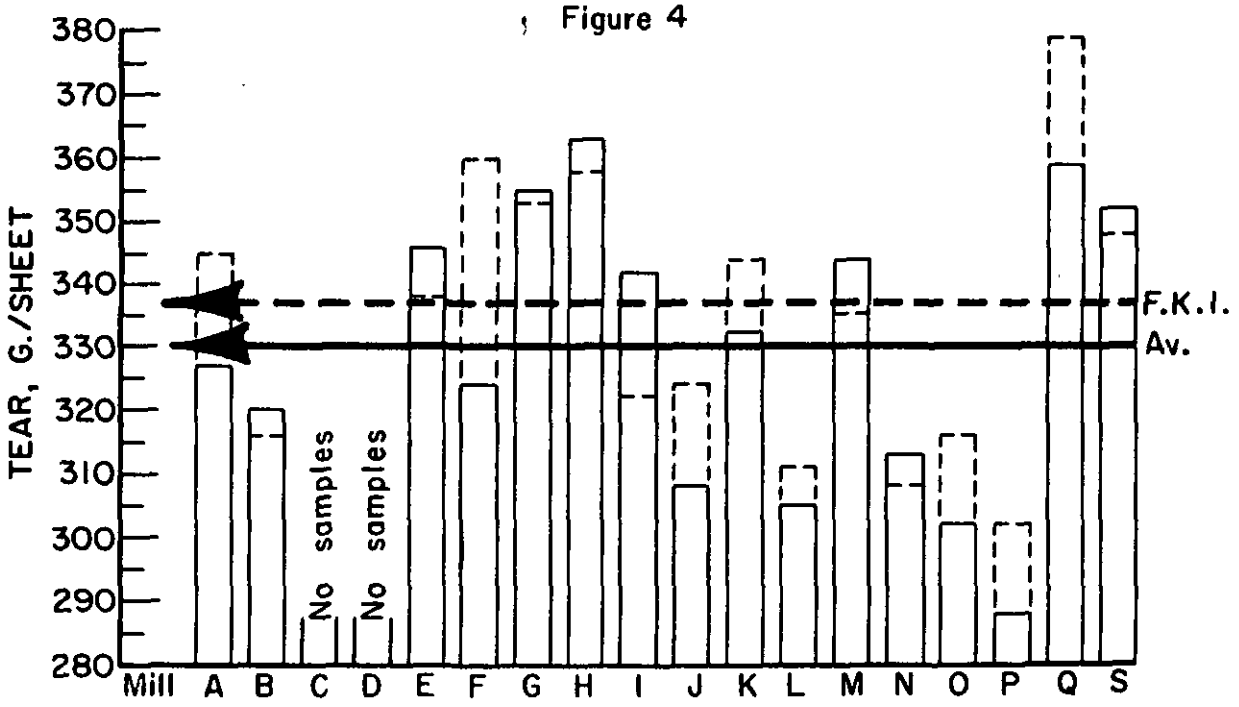
——— Current mill average
- - - - - Cumulative mill average

Figure 3



COMPARISON OF BURSTING STRENGTH RESULTS
(Period July 1 - July 31, 1957)

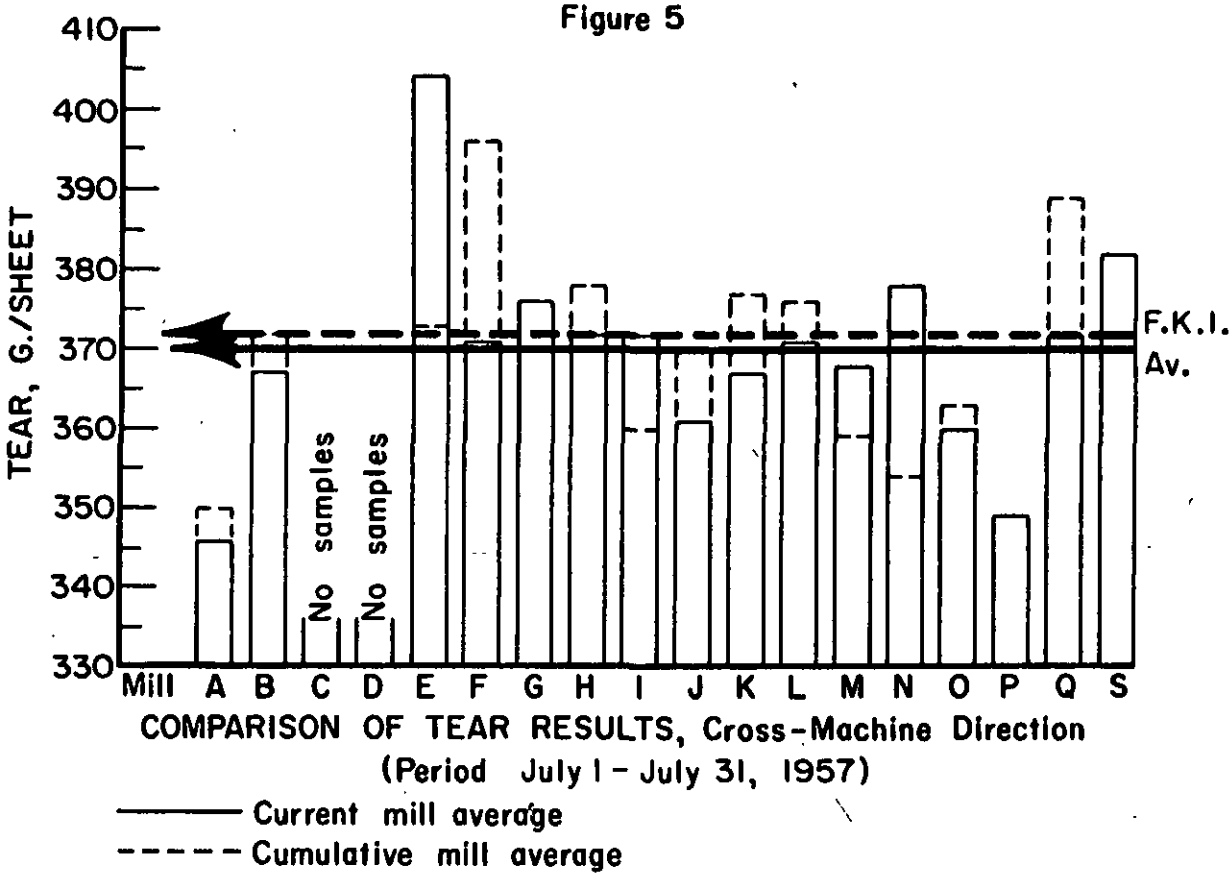
Figure 4



COMPARISON OF TEAR RESULTS, Machine Direction
(Period July 1 - July 31, 1957)

——— Current mill average
- - - - - Cumulative mill average

Figure 5



COMPARISON OF TEAR RESULTS, Cross-Machine Direction
(Period July 1 - July 31, 1957)

——— Current mill average
- - - - - Cumulative mill average

SUMMARY OF INSTITUTE DATA--JULY 1 THROUGH JULY 31, 1957

TABLE III

MILL A -- 42-LB. LINERBOARD

File No.	Finish	Date Recd.	Date Made	Mch. No.	Basis Weight, lb.			Caliper, points			Bursting Strength, p.s.i. gage			Elmendorf Tear, g./sheet					
														In			Across		
					Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.
174918	W.F.	7/ 8/57	6/29/57	-	44.4	42.4	43.5	13.1	11.3	12.3	128	79	109	376	280	331[a]	376	312	339[a]
174919	W.F.	7/ 8/57	6/29/57	-	44.4	42.8	43.8	13.0	12.0	12.4	123	95	108	384	272	323	384	320	353[a]
Current Mill Average:							43.6			12.3			109			327			346
Cumulative Mill Average:							42.9			12.4			108			345			350
Mill Factor, %							101.6			99.2			100.9			94.8			98.9
Mill Index, %							101.2			96.9			99.1			97.0			93.0

[a]This average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

SUMMARY OF INSTITUTE DATA--JULY 1 THROUGH JULY 31, 1957 (continued)

TABLE IV

MILL B -- 42-LB. LINERBOARD

File No.	Finish	Date Recd.	Date Made	Mch. No.	Basis Weight, lb.			Caliper, points			Bursting Strength, p.s.i. gage			Elmendorf Tear, g./sheet					
														In			Across		
					Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.
174855	WF1S	7/ 1/57	6/19/57	1	42.2	41.6	42.0	12.3	11.7	12.0	127	89	110	352	272	312[a]	400	320	361[a]
174870	WF1S	7/ 2/57	6/20/57	1	42.8	41.2	42.1	12.4	11.8	12.1	140	100	114	384	248	316[a]	400	320	371[a]
174871	WF1S	7/ 2/57	6/24/57	1	43.0	41.8	42.4	13.2	12.0	12.7	125	80	104	392	240	332[a]	408	328	369[a]
Current Mill Average:							42.2			12.3			109			320			367
Cumulative Mill Average:							43.0			12.4			110			316			372
Mill Factor, %							98.1			99.2			99.1			101.3			98.7
Mill Index, %							97.9			96.9			99.1			95.0			98.7

[a]This average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

SUMMARY OF INSTITUTE DATA--JULY 1 THROUGH JULY 31, 1957 (continued)

TABLE V

MILL C -- 42-LB. LINERBOARD

File No.	Finish	Date Recd.	Date Made	Mch. No.	Basis Weight, lb.			Caliper, points			Bursting Strength, p.s.i. gage			Elmendorf Tear, g./sheet					
														In			Across		
					Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.

No samples submitted.

TABLE VI

MILL D -- 42-LB. LINERBOARD

No samples submitted.

TABLE VII

MILL E -- 42-LB. LINERBOARD

174993	W.F.	7/16/57	6/28/57	2	42.4	41.0	41.8	12.3	12.0	12.1	136	83	110	368	328	346[a]	448	368	404[a]
Current Mill Average:							41.8			12.1			110			346			404
Cumulative Mill Average:							43.1			12.3			108			338			373
Mill Factor, %							97.0			98.4			101.9			102.4			108.3
Mill Index, %							97.0			95.3			100.0			102.7			108.6

[a]This average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

SUMMARY OF INSTITUTE DATA--JULY 1 THROUGH JULY 31, 1957 (continued)

TABLE VIII

MILL F -- 42-LB. LINERBOARD

File No.	Finish	Date Recd.	Date Made	Mch. No.	Basis Weight, lb.			Caliper, points			Bursting Strength, p.s.i. gage			Elmendorf Tear, g./sheet					
														In			Across		
					Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.
174872	WF1S	7/ 2/57	6/19/57	1	43.4	40.8	42.0	12.0	11.0	11.4	128	96	112	344	248	308[a]	416	320	359[a]
175030	WF1S	7/19/57	7/12/57	1	42.2	41.6	41.8	11.3	10.2	10.8	126	97	109	352	288	321[a]	424	352	385[a]
175013	WF1S	7/18/57	7/13/57	1	41.6	40.0	40.8	11.0	10.2	10.7	123	96	111	400	288	342[a]	400	344	369[a]
Current Mill Average:							41.5			10.9			111			324			371
Cumulative Mill Average:							42.3			12.0			108			360			396
Mill Factor, %							98.1			90.8			102.8			90.0			93.7
Mill Index, %							96.3			85.8			100.9			96.1			99.7

[a]This average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

SUMMARY OF INSTITUTE DATA—JULY 1 THROUGH JULY 31, 1957 (continued)

TABLE IX

MILL G — 42-LB. LINERBOARD

File No.	Finish	Date Recd.	Date Made	Mch. No.	Basis Weight, lb.			Caliper, points			Bursting Strength, p.s.i. gage			Elmendorf Tear, g./sheet					
														In			Across		
					Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.
174902	W.F.	7/ 5/57	6/26/57	-	43.2	41.6	42.4	12.9	12.1	12.5	122	96	110	456	312	355[a]	400	320	377[a]
174903	W.F.	7/ 5/57	6/27/57	-	45.6	44.0	44.5	13.8	12.4	13.2	120	85	108	432	336	373[a]	448	352	393[a]
174904	W.F.	7/ 5/57	6/28/57	-	44.2	42.8	43.9	13.2	12.7	12.9	127	99	112	424	328	367[a]	432	352	391[a]
174974	W.F.	7/15/57	7/10/57	-	43.8	42.2	42.9	13.2	12.8	13.0	123	100	111	384	320	343	400	352	379[a]
174975	W.F.	7/15/57	7/11/57	-	44.0	42.8	43.3	12.7	12.0	12.3	130	101	115	384	288	352	392	352	375
174976	W.F.	7/15/57	7/12/57	-	43.8	43.0	43.6	13.0	12.0	12.4	128	93	108	376	320	358[a]	408	352	372[a]
175112	W.F.	7/26/57	7/17/57	-	43.0	42.0	42.4	13.0	12.0	12.5	131	90	111	400	288	341[a]	416	336	377[a]
175113	W.F.	7/26/57	7/18/57	-	43.8	42.2	42.9	12.5	12.0	12.1	117	81	106	376	320	343[a]	376	312	341[a]
175114	W.F.	7/26/57	7/19/57	-	43.4	41.8	42.2	12.7	11.8	12.2	131	101	112	400	320	365[a]	432	336	380[a]
Current Mill Average:							43.1			12.6			110			355			376
Cumulative Mill Average:							43.7			12.8			110			353			376
Mill Factor, %							98.6			98.4			100.0			100.6			100.0
Mill Index, %							100.0			99.2			100.0			105.3			101.1

[a]This average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

SUMMARY OF INSTITUTE DATA--JULY 1 THROUGH JULY 31, 1957 (continued)

TABLE X

MILL H -- 42-LB. LINERBOARD

File No.	Finish	Date Recd.	Date Made	Mch. No.	Basis Weight, lb.			Caliper, points			Bursting Strength, p.s.i. gage			Elmendorf Tear, g./sheet					
														In			Across		
					Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.
174860	W.	7/ 1/57	6/14/57	4	44.4	42.2	43.7	13.0	12.3	12.8	130	96	110	384	320	361	400	352	371
174861	W.	7/ 1/57	6/18/57	4	44.2	42.2	43.4	13.2	12.4	12.9	135	101	113	432	320	369[a]	400	320	371[a]
174967	W.	7/12/57	6/19/57	4	44.8	42.4	43.8	13.4	12.9	13.1	134	91	111	392	336	365	416	344	371[a]
174968	W.	7/12/57	6/25/57	4	44.0	42.4	43.4	13.8	13.0	13.2	125	97	111	400	320	356	408	352	373[a]
Current Mill Average:							43.6			13.0			111			363			372
Cumulative Mill Average:							42.9			13.2			110			358			378
Mill Factor, %							101.6			98.5			100.9			101.4			98.4
Mill Index, %							101.2			102.4			100.9			107.7			100.0

[a]This average includes the readings for one or more specimens which tore beyone the 3/8-inch limit.

SUMMARY OF INSTITUTE DATA--JULY 1 THROUGH JULY 31, 1957 (continued)

TABLE XI

MILL I -- 42-LB. LINERBOARD

File No	Finish	Date Recd.	Date Made	Mch. No.	Basis Weight, lb.			Caliper, points			Bursting Strength, p.s.i. gage			Elmendorf Tear, g./sheet					
														In			Across		
					Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.
174859	WF1S	7/ 1/57	6/23/57	1	44.0	42.4	43.4	13.9	12.8	13.2	144	97	120	360	288	328	408	320	363[a]
174979	WF1S	7/15/57	6/18/57	1	44.0	42.2	42.9	14.1	12.3	13.2	150	72	121	400	320	357[a]	440	320	378[a]
174980	WF1S	7/15/57	7/ 6/57	1	44.0	42.2	43.3	14.1	13.0	13.4	141	98	118	464	320	372[a]	464	336	379[a]
175005	WF1S	7/17/57	7/11/57	1	44.2	42.8	43.8	13.9	13.1	13.4	137	93	115	360	264	311[a]	408	336	370[a]
Current Mill Average:							43.3			13.3			118			342			372
Cumulative Mill Average:							42.8			13.1			112			322			360
Mill Factor, %							101.2			101.5			105.4			106.2			103.3
Mill Index, %							100.5			104.7			107.3			101.5			100.0

[a]This average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

SUMMARY OF INSTITUTE DATA--JULY 1 THROUGH JULY 31, 1957 (continued)

TABLE XII

MILL J -- 42-LB. LINERBOARD

File No.	Finish	Date Recd.	Date Made	Mch. No.	Basis Weight, lb.			Caliper, points			Bursting Strength, p.s.i. gage			Elmendorf Tear, g./sheet					
														In			Across		
					Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.
174873	W.F.	7/ 2/57	6/19/57	2	42.4	41.6	42.0	13.2	12.0	12.6	152	94	118	368	272	315[a]	408	328	366[a]
174874	W.F.	7/ 2/57	6/19/57	2	42.4	41.2	42.0	12.9	12.0	12.3	142	94	113	368	272	305[a]	368	320	346[a]
174857	W.F.	7/ 1/57	6/22/57	1	42.0	40.6	41.4	12.3	11.8	12.0	136	94	113	368	272	308	400	320	359[a]
174858	W.F.	7/ 1/57	6/22/57	1	42.8	41.6	42.0	12.3	11.4	11.9	137	93	110	344	272	309	400	328	358[a]
174945	W.F.	7/10/57	6/22/57	2	42.2	40.4	41.8	12.1	11.0	11.7	141	96	122	384	224	316[a]	424	320	374[a]
174946	W.F.	7/10/57	6/22/57	2	42.0	40.2	41.5	12.1	11.0	11.8	138	103	118	352	240	293	392	320	365[a]
Current Mill Average:							41.8			12.1			116			308			361
Cumulative Mill Average:							42.9			12.5			111			324			370
Mill Factor, %							97.4			96.8			104.5			95.1			97.6
Mill Index, %							97.0			95.3			105.5			91.4			97.0

[a]This average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

SUMMARY OF INSTITUTE DATA--JULY 1 THROUGH JULY 31, 1957 (continued)

TABLE XIII

MILL K -- 42-LB. LINERBOARD

File No.	Finish	Date Recd.	Date Made	Mch. No.	Basis Weight, lb.			Caliper, points			Bursting Strength, p.s.i. gage			Elmendorf Tear, g./sheet					
														In			Across		
					Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.
174894	W.F.	7/ 3/57	6/ 9/57	4	43.6	42.0	42.4	11.8	10.9	11.2	128	94	112	368	280	332	384	352	367[a]
Current Mill Average:							42.4			11.2			112			332			367
Cumulative Mill Average:							42.3			11.5			111			344			377
Mill Factor, %							100.2			97.4			100.9			96.5			97.3
Mill Index, %							98.4			88.2			101.8			98.5			98.7

[a]This average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

SUMMARY OF INSTITUTE DATA--JULY 1 THROUGH JULY 31, 1957 (continued)

TABLE XIV

MILL L -- 42-LB. LINERBOARD

File No.	Finish	Date Recd.	Date Made	Mch. No.	Basis Weight, lb.			Caliper, points			Bursting Strength, p.s.i. gage			Elmendorf Tear, g./sheet					
														In			Across		
					Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.
175065	W.F.	7/23/57	6/ 3/57	1	43.4	41.8	42.3	14.3	13.8	14.0	130	83	109	336	256	309	400	336	377[a]
175066	W.F.	7/23/57	6/ 7/57	1	44.0	42.0	43.0	14.1	13.7	13.9	135	96	114	336	272	309	416	352	377[a]
175067	W.F.	7/23/57	6/12/57	1	42.2	41.8	42.0	14.7	13.7	14.0	135	80	112	328	256	291	400	320	358[a]
175096	W.F.	7/24/57	6/14/57	1	43.2	40.2	41.8	14.9	13.0	13.8	130	90	112	352	280	313	400	328	369[a]
175097	W.F.	7/24/57	6/17/57	1	43.0	40.8	42.0	14.5	13.1	13.9	132	85	113	336	256	302	400	336	372[a]
175098	W.F.	7/24/57	6/20/57	1	44.0	42.4	43.2	14.9	13.4	14.2	138	98	116	336	272	303[a]	400	344	376[a]
Current Mill Average:							42.4			14.0			113			305			371
Cumulative Mill Average:							42.8			13.4			116			311			376
Mill Factor, %							99.1			104.5			97.4			98.1			98.7
Mill Index, %							98.4			110.2			102.7			90.5			99.7

[a]This average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

SUMMARY OF INSTITUTE DATA--JULY 1 THROUGH JULY 31, 1957 (continued)

TABLE XV

MILL M -- 42-LB. LINERBOARD

File No.	Finish	Date Recd.	Date Made	Mch. No.	Basis Weight, lb.			Caliper, points			Bursting Strength, p.s.i. gage			Elmendorf Tear, g./sheet					
														In			Across		
					Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.
174865	WFlS	7/ 1/57	6/26/57	2	44.0	40.8	42.3	13.4	13.0	13.2	125	96	111	360	296	329	424	336	371[a]
174971	WFlS	7/15/57	6/28/57	2	44.0	41.4	42.2	14.2	12.9	13.5	120	85	104	400	304	346[a]	392	336	367[a]
174972	WFlS	7/15/57	7/ 9/57	2	43.8	41.0	42.6	14.2	12.5	13.3	136	94	116	400	304	357[a]	416	320	361[a]
174973	WFlS	7/15/57	7/10/57	2	43.8	41.6	42.6	14.0	12.9	13.5	134	87	107	376	304	346[a]	400	344	372[a]
Current Mill Average:							42.4			13.4			110			344			368
Cumulative Mill Average:							42.7			13.4			108			335			359
Mill Factor, %							99.3			100.0			101.9			102.7			102.5
Mill Index, %							98.4			105.5			100.0			102.1			98.9

[a]This average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

SUMMARY OF INSTITUTE DATA--JULY 1 THROUGH JULY 31, 1957 (continued)

TABLE XVI

MILL N -- 42-LB. LINERBOARD

File No.	Finish	Date Recd.	Date Made	Mch. No.	Basis Weight, lb.			Caliper, points			Bursting Strength, p.s.i. gage			Elmendorf Tear, g./sheet					
														In			Across		
					Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.
174854	WF1S	7/ 1/57	6/21/57	1	42.4	40.8	41.9	14.0	12.1	13.0	129	83	112	368	264	307[a]	416	320	369[a]
174944	WF1S	7/10/57	6/24/57	1	43.8	42.0	42.9	13.1	12.0	12.5	127	93	108	392	256	320[a]	464	352	400[a]
175100	WF1S	7/24/57	7/22/57	1	44.8	42.4	43.9	13.2	12.0	12.6	137	92	116	376	272	311	416	320	365[a]
Current Mill Average:							42.9			12.7			112			313			378
Cumulative Mill Average:							42.9			12.7			109			308			354
Mill Factor, %							100.0			100.0			102.8			101.6			106.8
Mill Index, %							99.5			100.0			101.8			92.9			101.6

[a]This average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

SUMMARY OF INSTITUTE DATA--JULY 1 THROUGH JULY 31, 1957 (continued)

TABLE XVII

MILL O -- 42-LB. LINERBOARD

File No.	Finish	Date Recd.	Date Made	Mch. No.	Basis Weight, lb.			Caliper, points			Bursting Strength, p.s.i. gage			Elmendorf Tear, g./sheet					
														In			Across		
					Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.
174852	W.F.	7/ 1/57	6/18/57	1	43.6	42.2	42.8	13.2	11.9	12.6	136	89	114	328	240	287[a]	368	304	341[a]
174853	W.F.	7/ 1/57	6/19/57	1	43.8	42.8	43.3	12.9	12.2	12.7	130	98	114	384	272	307[a]	392	344	361[a]
174866	W.F.	7/ 1/57	6/23/57	1	44.0	42.4	43.4	13.1	12.5	12.8	135	90	111	344	280	306	400	336	366[a]
174867	W.F.	7/ 1/57	6/23/57	2	43.4	42.2	42.6	12.1	11.3	11.8	133	92	117	320	240	279	368	320	353[a]
175047	W.F.	7/22/57	7/11/57	1	44.2	43.8	44.0	12.8	12.1	12.4	141	92	121	368	272	325	424	352	380[a]
175048	W.F.	7/22/57	7/12/57	2	44.0	42.0	43.0	12.8	11.2	12.1	123	81	110	368	288	315	400	336	366[a]
175110	W.F.	7/26/57	7/19/57	2	44.0	43.8	43.9	12.8	12.0	12.4	130	90	112	320	280	303	392	328	350[a]
175111	W.F.	7/26/57	7/19/57	2	44.2	42.4	43.7	13.0	12.2	12.7	130	92	113	344	256	291	400	336	364[a]
Current Mill Average:							43.3			12.4			114			302			360
Cumulative Mill Average:							43.5			12.6			110			316			363
Mill Factor, %							99.5			98.4			103.6			95.6			99.2
Mill Index, %							100.5			97.6			103.6			89.6			96.8

[a]This average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

SUMMARY OF INSTITUTE DATA--JULY 1 THROUGH JULY 31, 1957 (continued)

TABLE XVIII

MILL P -- 42-LB. LINERBOARD

File No.	Finish	Date Recd.	Date Made	Mch. No.	Basis Weight, lb.			Caliper, points			Bursting Strength, p.s.i. gage			Elmendorf Tear, g./sheet					
														In			Across		
					Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.
174868	W.F.	7/ 2/57	6/20/57	1	44.2	42.8	43.8	13.2	12.2	12.9	132	93	115	352	248	297[a]	376	296	335[a]
174869	W.F.	7/ 2/57	6/24/57	1	45.2	42.4	44.0	13.0	11.8	12.3	123	94	109	320	232	279	400	296	356[a]
174895	W.F.	7/ 3/57	6/26/57	1	46.0	43.8	44.3	12.7	11.9	12.2	126	90	110	336	256	284	384	320	341[a]
175046	W.F.	7/22/57	7/ 9/57	1	44.8	43.6	44.2	13.0	12.0	12.4	137	70	108	344	232	290[a]	416	328	365[a]
175099	W.F.	7/24/57	7/17/57	1	44.2	43.6	43.9	13.1	12.1	12.8	129	100	113	320	264	288	384	320	349[a]
Current Mill Average:							44.0			12.5			111			288			349
Cumulative Mill Average:							43.2			12.8			110			302			349
Mill Factor, %							101.9			97.7			100.9			95.4			100.0
Mill Index, %							102.1			98.4			100.9			85.5			93.8

[a]This average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

SUMMARY OF INSTITUTE DATA--JULY 1 THROUGH JULY 31, 1957 (continued)

TABLE XIX

MILL Q -- 42-LB. LINERBOARD

File No.	Finish	Date Recd.	Date Made	Mch. No.	Basis Weight, lb.			Caliper, points			Bursting Strength, p.s.i. gage			Elmendorf Tear, g./sheet					
														In			Across		
					Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.
174856	S.F.	7/ 1/57	6/24/57	7	43.0	41.6	42.0	13.2	12.3	12.8	129	73	101	448	288	362[a]	416	336	371[a]
174917	S.F.	7/ 8/57	7/ 2/57	7	45.6	41.2	43.2	13.2	12.8	13.0	131	92	106	392	320	356[a]	416	336	373[a]
Current Mill Average:							42.6			12.9			104			359			372
Cumulative Mill Average:							43.7			13.1			105			379			389
Mill Factor, %							97.5			98.5			99.0			94.7			95.6
Mill Index, %							98.8			101.6			94.5			106.5			100.0

[a]This average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

SUMMARY OF INSTITUTE DATA--JULY 1 THROUGH JULY 31, 1957 (continued)

TABLE XX

MILL S -- 42-LB. LINERBOARD

File No.	Finish	Date Recd.	Date Made	Mch. No.	Basis Weight, lb.			Caliper, points			Bursting Strength, p.s.i. gage			Elmendorf Tear, g./sheet					
														In			Across		
					Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.
174862	W.F.	7/ 1/57	6/26/57	-	44.8	43.2	44.0	13.1	12.6	12.9	133	94	118	368	320	343[a]	408	336	373[a]
174863	W.F.	7/ 1/57	6/26/57	-	46.0	43.2	44.4	13.2	12.0	12.5	145	97	116	376	320	348[a]	432	368	393[a]
174864	W.F.	7/ 1/57	6/27/57	-	45.4	43.2	44.2	13.5	12.4	13.1	143	100	118	376	320	353	432	336	382[a]
174977	W.F.	7/15/57	7/ 1/57	-	44.8	43.0	44.1	13.3	12.3	12.9	130	96	115	496	312	389[a]	464	336	396[a]
174978	W.F.	7/15/57	7/ 2/57	-	43.2	41.6	42.2	13.0	12.0	12.3	126	97	114	400	256	334[a]	400	320	363[a]
175031	W.F.	7/19/57	7/11/57	-	45.8	43.8	44.9	13.0	11.4	12.4	140	104	123	392	320	359[a]	440	368	393[a]
175049	W.F.	7/22/57	7/19/57	-	44.0	42.0	42.6	13.1	12.1	12.5	142	102	117	416	288	360[a]	432	344	381[a]
175050	W.F.	7/22/57	7/19/57	-	44.0	42.4	43.7	13.0	12.1	12.5	142	102	119	400	272	353[a]	424	352	381[a]
175109	W.F.	7/26/57	7/20/57	-	45.2	43.8	44.2	12.7	12.0	12.3	141	93	117	352	320	329	400	352	377[a]
Current Mill Average:							43.8			12.6			117			352			382
Cumulative Mill Average:							43.4			12.8			112			348			382
Mill Factor, %							100.9			98.4			104.5			101.1			100.0
Mill Index, %							101.6			99.2			106.4			104.5			102.7

TABLE XXI

MILL R -- 47-LB. DRUM LINERBOARD

No samples submitted.

[a]This average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

As a supplementary part of the Continuous Baseline Study, comparisons of the mill test results with those obtained at The Institute of Paper Chemistry on corresponding samples have been included in this report. As may be noted in Table XXII, the atmospheric conditions used prior to and during the testing period were relatively uniform for the mills which reported this information. However, the conditioning periods varied considerably.

TABLE XXII

Mill Code	Preconditioning R.H., %	Temp., °F.	Time, hr.	Conditioning R.H., %	Temp., °F.	Time, hr.
A		None		50	73	0.5
B		None		55-57	75-82	--
C			No samples submitted.			
D			No samples submitted.			
E		None		50	73	24
F	50	72-73	24	50-51	73	24
G	36	78	8	51-52	72-73	16
H		None		52	72-73	--
I		None		38-62	95-104	--
J	50	73	24	50	73	24
K		None		50	73	24
L		None		78-82	88-92	--
M	45-50	72-76	24		None	
N	62-70	74-78	48-192	63-77	70-78	1-2
O		None		50	73	24
P	46-49	72-80	0.5	50	73	24--48
Q	50	73	24	50	73	--
S		None		50	72-73	24-216

A summary of the Institute and mill test results for the current period is shown in Table XXIII, and a comparison of differences between Institute and mill test results is given in Table XXIV for the

current period and the two previous periods. The comparisons are given in Tables XXV to XLII, for the 42-lb. liner samples. A comparison of the special drum stock is given in Table XLIII. In all the comparisons given in Tables XXV to XLIII, the Institute's test values have been used as the reference line.

A comparison of the test data in Tables XXIII and XXIV reveals the level of agreement between mill and Institute data for basis weight, caliper, bursting strength, and Elmendorf tear. Table XXIII shows the average difference between Institute and mill test results for all sample lots submitted by each mill for the current period. In addition, the maximum difference encountered in comparing the Institute and mill test results for a given sample lot is shown. In Table XXIV, the average differences shown for each test in Table XXIII have been calculated on a percentage basis for each mill. In addition, for purposes of comparison, the average percentage differences for the preceding two periods are shown.

It may be noted in Table XXIV that the maximum variation between the average basis weight results of the Institute and those of a given mill on corresponding samples is four per cent for the current period. By comparison, the maximum percentage variation noted for the previous two periods was three per cent. Further, it may be noted that the average basis weight results for Mills B, E, F, G, J, M, N, Q, and S are higher than those for the Institute, and the average results for the other mills are lower. None of the variations for the current period appear to be excessive with the possible exception of the 4% variation noted for Mill E.

The maximum variation in caliper for the current period is five per cent. This variation is slightly less than the maximum variation of seven per cent for the previous two periods. Compared with the Institute's test results, the test results for all mills are lower with the exception of the result for Mill E which is the same and the results for Mills K and P which are slightly higher. Only the variation for Mill H appears to be excessive.

It may be noted in Table XXIV that the bursting strength results exhibited a maximum variation of seven per cent for the current period. The average results for Mills B, E, and Q are higher than those for the Institute, the average results for Mills G, J, and O are the same, and the results for the other mills are lower. Only the variations associated with the results for Mills E and S appear to be excessive.

It may be seen in Tables XXIII and XXIV that the average machine direction tear results for Mills A, B, E, F, I, J, M, N, O, and P are higher than those for the Institute, and the results for the other mills are lower. The maximum variation for the current period is twelve per cent. The variations which exceed a magnitude of ten per cent may be excessive. The only mill in this category is K.

With regard to the cross-machine direction tear results, it may be noted that the average results for Mills A, B, E, F, I, M, N, O, P, and S are higher than those for the Institute, the average result for Mill G is the same, and the average results for the other mills are lower. The maximum variation for the current period is nineteen per cent. The variations noted for Mills A, B, F, and M exceed ten per cent and appear to be excessive.

TABLE XXIII

SUMMARY OF TEST RESULT COMPARISONS (AVERAGE MILL AND INSTITUTE RESULTS)

Mills*	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	S
No. Samples Compared	2	3	0	0	1	3	9	4	4	6	1	6	4	3	8	5	2	9
Basis Weight																		
Institute	43.6	42.2			41.8	41.5	43.1	43.6	43.3	41.8	42.4	42.4	42.4	42.9	43.3	44.0	42.6	43.8
Mill	42.8	42.4			43.5	41.8	43.3	43.2	42.6	42.3	42.3	42.2	43.7	44.0	42.8	43.9	42.7	44.2
Av. Diff.**	-0.8	+0.2			+1.7	+0.3	+0.2	-0.4	-0.7	+0.5	-0.1	-0.2	+1.3	+1.1	-0.5	-0.1	+0.1	+0.4
Max. Diff.***	-1.1	+0.5			+1.7	+0.3	+1.3	-0.7	-1.4	+1.0	-0.1	-1.0	+1.7	+2.0	-0.9	-0.6	+0.4	+1.0
Caliper																		
Institute	12.3	12.3			12.1	10.9	12.6	13.0	13.3	12.1	11.2	14.0	13.4	12.7	12.4	12.5	12.9	12.6
Mill	12.0	12.2			12.1	10.6	12.3	12.4	12.9	11.8	11.3	13.6	--	12.2	12.2	12.6	12.4	12.4
Av. Diff.**	-0.3	-0.1			0.0	-0.3	-0.3	-0.6	-0.4	-0.3	+0.1	-0.4	--	-0.5	-0.2	+0.1	-0.5	-0.2
Max. Diff.***	-0.4	±0.1			0.0	-0.6	-0.6	-0.7	-0.6	-0.4	+0.1	-0.8	--	-0.6	-0.6	+0.2	-0.5	-0.5
Bursting Strength																		
Institute	109	109			110	111	110	111	118	116	112	113	110	112	114	111	104	117
Mill	108	110			116	107	110	110	113	116	109	110	108	110	114	110	106	109
Av. Diff.**	-1	+1			+6	-4	0	-1	-5	0	-3	-3	-2	-2	0	-1	+2	-8
Max. Diff.***	-2	+5			+6	-11	-4	-3	-9	±4	-3	-5	-5	-5	+9	-4	+6	-13
Tearing Strength, In																		
Institute	327	320			346	324	355	363	342	308	332	305	344	313	302	288	359	352
Mill	359	352			367	350	346	354	351	312	293	278	360	322	313	312	338	333
Av. Diff.**	+32	+32			+21	+26	-9	-9	+9	+4	-39	-27	+16	+9	+11	+24	-21	-19
Max. Diff.***	+34	+39			+21	+55	-24	-22	-49	+25	-39	-40	+22	+36	+51	+36	-27	-48
Tearing Strength, Across																		
Institute	346	367			404	371	376	372	372	361	367	371	368	378	360	349	372	382
Mill	388	409			427	443	376	359	397	355	355	364	417	385	377	370	367	395
Av. Diff.**	+42	+42			+23	+72	0	-13	+25	-6	-12	-7	+49	+7	+17	+21	-5	+13
Max. Diff.***	+56	+46			+23	+86	+12	-22	+61	+32	-12	-13	+59	+18	+59	+31	-8	+38

* Comparison based on averages involved only those samples on which mill test data were submitted.
** Average difference is the difference between the Institute mill average and the mill average based on mill test data.
*** Maximum difference encountered in comparing the Institute average and the mill average for any sample submitted by that particular mill.

TABLE XXIV

COMPARISON OF INSTITUTE-MILL DIFFERENCES BY PERIODS

Average Differences, per cent

Mill	Period	Basis Weight	Caliper	Burst	Tear, in	Tear, across
A	Cur.	-2	-2	-0.9	+10	+12
	120	-0.9	-2	0	+5	+10
	119	-1	-2	+2	-6	+0.3
B	Cur.	+0.5	-0.8	+0.9	+10	+11
	120	-0.9	-2	-0.9	+9	+5
	119	-0.7	-3	-3	+11	+10
C	Cur.	—	--	--	--	--
	120	-0.5	-4	-5	-6	-2
	119	0	-4	-3	-13	-8
D	Cur.	--	--	--	--	--
	120	--	--	--	--	--
	119	--	--	--	--	--
E	Cur.	+4	0	+5	+6	+6
	120	+0.7	-2	+0.9	+10	+15
	119	-0.9	-4	-0.9	+2	+9
F	Cur.	+0.7	-3	-4	+8	+19
	120	0	-4	-4	+14	+25
	119	0	-2	-0.9	+7	+18
G	Cur.	+0.5	-2	0	-3	0
	120	-0.5	-0.8	-2	+0.6	+0.8
	119	+0.5	-3	0	-1	+4
H	Cur.	-0.9	-5	-0.9	-2	-3
	120	-0.2	-4	-2	-3	-3
	119	-0.9	-5	+7	-6	-7
I	Cur.	-2	-3	-4	+3	+7
	120	0	-3	-3	+5	+8
	119	-2	-5	-4	+8	+10
J	Cur.	+1	-2	0	+1	-2
	120	+0.9	-2	+0.9	+4	+2
	119	+1	-2	-2	+2	-2
K	Cur.	-0.2	+0.9	-3	-12	-3
	120	+0.5	-0.8	-12	-10	-6
	119	+0.5	-2	-6	-11	-7
L	Cur.	-0.5	-3	-3	-9	-2
	120	-2	-3	-5	-12	-4
	119	-0.9	-2	-4	-12	-3
M	Cur.	+3	—	-2	+5	+13
	120	+2	-4	-6	+11	+12
	119	+3	-0.8	-7	+4	+10
N	Cur.	+3	-4	-2	+3	+2
	120	+0.2	-5	-2	+0.6	+2
	119	+0.7	-7	+0.9	-21	-7
O	Cur.	-1	-2	0	+4	+5
	120	-0.9	-0.8	-3	+8	+7
	119	-0.9	-3	+0.9	+5	+4
P	Cur.	-0.2	+0.8	-0.9	+8	+6
	120	-0.2	0	-4	+9	+13
	119	-0.9	-2	-0.9	+3	+3
Q	Cur.	+0.2	-4	+2	-6	-1
	120	-0.2	-4	+3	-8	+2
	119	-1	-3	-4	+0.3	+7
S	Cur.	+0.9	-2	-7	-5	+3
	120	+0.2	-4	-7	-3	+0.3
	119	+0.5	-3	-6	-5	-3

COMPARISON OF INSTITUTE AND MILL DATA--JULY 1 THROUGH JULY 31, 1957

TABLE XXV

MILL A -- 42-LB. LINERBOARD

File No.	Finish	Date Made	Mch. No.	Basis Weight, lb.			Caliper, points			Bursting Strength, p.s.i. gage			Elmendorf Tear, g./sheet					
													In			Across		
				IPC	Mill	Diff.	IPC	Mill	Diff.	IPC	Mill	Diff.	IPC	Mill	Diff.	IPC	Mill	Diff.
174918	W.F.	6/29/57	-	43.5	42.9	-0.6	12.3	12.1	-0.2	109	110	+ 1	331[a]	365	+34	339[a]	395	+56
174919	W.F.	6/29/57	-	43.8	42.7	-1.1	12.4	12.0	-0.4	108	106	- 2	323	354	+31	353[a]	381	+28
Current Mill Average:				43.6	42.8	-0.8	12.3	12.0	-0.3	109	108	- 1	327	359	+32	346	388	+42

TABLE XXVI

MILL B -- 42-LB. LINERBOARD

174855	WF1S	6/19/57	1	42.0	42.5	+0.5	12.0	12.1	+0.1	110	111	+ 1	312[a]	351	+39	361[a]	407	+46
174870	WF1S	6/20/57	1	42.1	42.3	+0.2	12.1	12.1	0.0	114	110	- 4	316[a]	351	+35	371[a]	409	+38
174871	WF1S	6/24/57	1	42.4	42.3	-0.1	12.7	12.6	-0.1	104	109	+ 5	332[a]	353	+21	369[a]	412	+43
Current Mill Average:				42.2	42.4	+0.2	12.3	12.2	-0.1	109	110	+ 1	320	352	+32	367	409	+42

[a]This average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.
Note: All "current mill average" data are calculated from the totals of the individual readings.

COMPARISON OF INSTITUTE AND MILL DATA--JULY 1 THROUGH JULY 31, 1957 (continued)

TABLE XXVII

MILL C -- 42-LB. LINERBOARD

File No.	Finish	Date Made	Mch. No.	Basis Weight, lb.			Caliper, points			Bursting Strength, p.s.i. gage			Elmendorf Tear, g./sheet					
													In			Across		
				IPC	Mill	Diff.	IPC	Mill	Diff.	IPC	Mill	Diff.	IPC	Mill	Diff.	IPC	Mill	Diff.
No samples submitted.																		

TABLE XXVIII

MILL D -- 42-LB. LINERBOARD

No samples submitted.

TABLE XXIX

MILL E -- 42-LB. LINERBOARD

174993	W.F.	6/28/57	2	41.8	43.5	+1.7	12.1	12.1	0.0	110	116	+ 6	346[a]	367	+21	404[a]	427	+23
Current Mill Average:				41.8	43.5	+1.7	12.1	12.1	0.0	110	116	+ 6	346	367	+21	404	427	+23

[a]This average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

Note: All "current mill average" data are calculated from the totals of the individual readings.

COMPARISON OF INSTITUTE AND MILL DATA--JULY 1 THROUGH JULY 31, 1957 (continued)

TABLE XXX

MILL F -- 42-LB. LINERBOARD

File No.	Finish	Date Made	Mch. No.	Basis Weight, lb.			Caliper, points			Bursting Strength, p.s.i. gage			Elmendorf Tear, g./sheet					
													In			Across		
				IPC	Mill	Diff.	IPC	Mill	Diff.	IPC	Mill	Diff.	IPC	Mill	Diff.	IPC	Mill	Diff.
174872	WF1S	6/19/57	1	42.0	42.3	+0.3	11.4	11.1	-0.3	112	101	-11	308[a]	363	+55	359[a]	445	+86
175030	WF1S	7/12/57	1	41.8	42.1	+0.3	10.8	10.6	-0.2	109	108	- 1	321[a]	353	+32	385[a]	446	+61
175013	WF1S	7/13/57	1	40.8	40.9	+0.1	10.7	10.1	-0.6	111	111	0	342[a]	334	- 8	369[a]	437	+68
Current Mill Average:				41.5	41.8	+0.3	10.9	10.6	-0.3	111	107	- 4	324	350	+26	371	443	+72

TABLE XXXI

MILL G -- 42-LB. LINERBOARD

174902	W.F.	6/26/57	-	42.4	42.4	0.0	12.5	12.2	-0.3	110	112	+ 2	355[a]	331	-24	377[a]	372	- 5
174903	W.F.	6/27/57	-	44.5	44.6	+0.1	13.2	12.9	-0.3	108	110	+ 2	373[a]	384	+11	393[a]	401	+ 8
174904	W.F.	6/28/57	-	43.9	43.5	-0.4	12.9	12.5	-0.4	112	113	+ 1	367[a]	352	-15	391[a]	391	0
174974	W.F.	7/10/57	-	42.9	43.3	+0.4	13.0	12.7	-0.3	111	110	- 1	343	324	-19	379[a]	376	- 3
174975	W.F.	7/11/57	-	43.3	43.4	+0.1	12.3	12.0	-0.3	115	111	- 4	352	364	+12	375	380	+ 5
174976	W.F.	7/12/57	-	43.6	43.1	-0.5	12.4	11.8	-0.6	108	109	+ 1	358[a]	344	-14	372[a]	363	- 9
175112	W.F.	7/17/57	-	42.4	43.7	+1.3	12.5	12.1	-0.4	111	110	- 1	341[a]	351	+10	377[a]	375	- 2
175113	W.F.	7/18/57	-	42.9	43.0	+0.1	12.1	12.0	-0.1	106	106	0	343[a]	323	-20	341[a]	353	+12
175114	W.F.	7/19/57	-	42.2	42.8	+0.6	12.2	12.1	-0.1	112	108	- 4	365[a]	345	-20	380[a]	373	- 7
Current Mill Average:				43.1	43.3	+0.2	12.6	12.3	-0.3	110	110	0	355	346	- 9	376	376	0

[a]This average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.
Note: All "current mill average" data are calculated from the totals of the individual readings.

COMPARISON OF INSTITUTE AND MILL DATA--JULY 1 THROUGH JULY 31, 1957 (continued)

TABLE XXXII

MILL H -- 42-LB. LINERBOARD

File No.	Finish	Date Made	Mch. No.	Basis Weight, lb.			Caliper, points			Bursting Strength, p.s.i. gage			Elmendorf Tear, g./sheet					
													In			Across		
				IPC	Mill	Diff.	IPC	Mill	Diff.	IPC	Mill	Diff.	IPC	Mill	Diff.	IPC	Mill	Diff.
174860	W.	6/14/57	4	43.7	43.6	-0.1	12.8	12.1	-0.7	110	107	- 3	361	370	+ 9	371	383	+12
174861	W.	6/18/57	4	43.4	43.3	-0.1	12.9	12.2	-0.7	113	110	- 3	369[a]	347	-22	371[a]	351	-20
174967	W.	6/19/57	4	43.8	43.4	-0.4	13.1	12.6	-0.5	111	111	0	365	355	-10	371[a]	351	-20
174968	W.	6/25/57	4	43.4	42.7	-0.7	13.2	12.6	-0.6	111	110	- 1	356	346	-10	373[a]	351	-22
Current Mill Average:				43.6	43.2	-0.4	13.0	12.4	-0.6	111	110	- 1	363	354	- 9	372	359	-13

TABLE XXXIII

MILL I -- 42-LB. LINERBOARD

174859	WF1S	6/23/57	1	43.4	42.8	-0.6	13.2	12.9	-0.3	120	117	- 3	328	372	+44	363[a]	403	+40
174979	WF1S	6/18/57	1	42.9	42.8	-0.1	13.2	12.9	-0.3	121	115	- 6	357[a]	405	+48	378[a]	439	+61
174980	WF1S	7/ 6/57	1	43.3	42.2	-1.1	13.4	12.8	-0.6	118	112	- 6	372[a]	323	-49	379[a]	361	-18
175005	WF1S	7/11/57	1	43.8	42.4	-1.4	13.4	12.8	-0.6	115	106	- 9	311[a]	304	- 7	370[a]	384	+14
Current Mill Average:				43.3	42.6	-0.7	13.3	12.9	-0.4	118	113	- 5	342	351	+ 9	372	397	+25

[a]This average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

Note: All "current mill average" data are calculated from the totals of the individual readings.

COMPARISON OF INSTITUTE AND MILL DATA--JULY 1 THROUGH JULY 31, 1957 (continued)

TABLE XXXIV

MILL J -- 42-LB. LINERBOARD

File No.	Finish	Date Made	Mch. No.	Basis Weight, lb.			Caliper, points			Bursting Strength, p.s.i. gage			Elmendorf Tear, g./sheet					
													In			Across		
				IPC	Mill	Diff.	IPC	Mill	Diff.	IPC	Mill	Diff.	IPC	Mill	Diff.	IPC	Mill	Diff.
174873	W.F.	6/19/57	2	42.0	43.0	+1.0	12.6	12.5	-0.1	118	114	- 4	315[a]	339	+14	366[a]	374	+ 8
174874	W.F.	6/19/57	2	42.0	42.8	+0.8	12.3	12.1	-0.2	113	114	+ 1	305[a]	330	+25	346[a]	378	+32
174857	W.F.	6/22/57	1	41.4	42.0	+0.6	12.0	11.6	-0.4	113	114	+ 1	308	308	0	359[a]	341	-18
174858	W.F.	6/22/57	1	42.0	41.7	-0.3	11.9	11.7	-0.2	110	112	+ 2	309	306	- 3	358[a]	339	-19
174945	W.F.	6/22/57	2	41.8	42.2	+0.4	11.7	11.5	-0.2	122	122	0	316[a]	294	-22	374[a]	357	-17
174946	W.F.	6/22/57	2	41.5	42.2	+0.7	11.8	11.5	-0.3	118	122	+ 4	293	297	+ 4	365[a]	344	-21
Current Mill Average:				41.8	42.3	+0.5	12.1	11.8	-0.3	116	116	0	308	312	+ 4	361	355	- 6

TABLE XXXV

MILL K -- 42-LB. LINERBOARD

174894	W.F.	6/ 9/57	4	42.4	42.3	-0.1	11.2	11.3	+0.1	112	109	- 3	332	293	-39	367[a]	355	-12
Current Mill Average:				42.4	42.3	-0.1	11.2	11.3	+0.1	112	109	- 3	332	293	-39	367	355	-12

[a]This average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

Note: All "current mill average" data are calculated from the totals of the individual readings.

COMPARISON OF INSTITUTE AND MILL DATA--JULY 1 THROUGH JULY 31, 1957 (continued)

TABLE XXXVI

MILL L -- 42-LB. LINERBOARD

File No.	Finish	Date Made	Mch. No.	Basis Weight, lb.			Caliper, points			Bursting Strength, p.s.i. gage			Elmendorf Tear, g./sheet In			Elmendorf Tear, g./sheet Across		
				IPC	Mill	Diff.	IPC	Mill	Diff.	IPC	Mill	Diff.	IPC	Mill	Diff.	IPC	Mill	Diff.
175065	W.F.	6/ 3/57	1	42.3	42.5	+0.2	14.0	13.6	-0.4	109	109	0	309	269	-40	377[a]	366	-11
175066	W.F.	6/ 7/57	1	43.0	42.0	-1.0	13.9	13.7	-0.2	114	111	- 3	309	290	-19	377[a]	365	-12
175067	W.F.	6/12/57	1	42.0	42.5	+0.5	14.0	13.5	-0.5	112	109	- 3	291	266	-25	358[a]	364	+ 6
175096	W.F.	6/14/57	1	41.8	42.0	+0.2	13.8	13.6	-0.2	112	110	- 2	313	284	-29	369[a]	366	- 3
175097	W.F.	6/17/57	1	42.0	41.8	-0.2	13.9	13.6	-0.3	113	109	- 4	302	279	-23	372[a]	359	-13
175098	W.F.	6/20/57	1	43.2	42.4	-0.8	14.2	13.4	-0.8	116	111	- 5	303[a]	282	-21	376[a]	364	-12
Current Mill Average:				42.4	42.2	-0.2	14.0	13.6	-0.4	113	110	- 3	305	278	-27	371	364	- 7

TABLE XXXVII

MILL M -- 42-LB. LINERBOARD

174865	WF1S	6/26/57	2	42.3	44.0	+1.7	13.2			111	114	+ 3	329	351	+22	371[a]	422	+51
174971	WF1S	6/28/57	2	42.2	43.5	+1.3	13.5			104	101	- 3	346[a]	363	+17	367[a]	424	+57
174972	WF1S	7/ 9/57	2	42.6	43.8	+1.2	13.3			116	112	- 4	357[a]	365	+ 8	361[a]	420	+59
174973	WF1S	7/10/57	2	42.6	43.4	+0.8	13.5			107	102	- 5	346[a]	363	+17	372[a]	403	+31
Current Mill Average:				42.4	43.7	+1.3	13.4			110	108	- 2	344	360	+16	368	417	+49

[a]This average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

Note: All "current mill average" data are calculated from the totals of the individual readings.

COMPARISON OF INSTITUTE AND MILL DATA--JULY 1 THROUGH JULY 31, 1957 (continued)

TABLE XXXVIII

MILL N -- 42-LB. LINERBOARD

File No.	Finish	Date Made	Mch. No.	Basis Weight, lb.			Caliper, points			Bursting Strength, p.s.i. gage			Elmendorf Tear, g./sheet					
													In			Across		
				IPC	Mill	Diff.	IPC	Mill	Diff.	IPC	Mill	Diff.	IPC	Mill	Diff.	IPC	Mill	Diff.
174854	WFlS	6/21/57	1	41.9	43.8	+1.9	13.0	12.4	-0.6	112	108	- 4	307[a]	305	- 2	369[a]	387	+18
174944	WFlS	6/24/57	1	42.9	44.9	+2.0	12.5	12.2	-0.3	108	111	+ 3	320[a]	356	+36	400[a]	401	+ 1
175100	WFlS	7/22/57	1	43.9	43.2	-0.7	12.6	12.1	-0.5	116	111	- 5	311	305	- 6	365[a]	368	+ 3
Current Mill Average:				42.9	44.0	+1.1	12.7	12.2	-0.5	112	110	- 2	313	322	+ 9	378	385	+ 7

TABLE XXXIX

MILL O -- 42-LB. LINERBOARD

174852	W.F.	6/18/57	1	42.8	42.6	-0.2	12.6	12.3	-0.3	114	110	- 4	287[a]	338	+51	341[a]	400	+59
174853	W.F.	6/19/57	1	43.3	42.8	-0.5	12.7	12.4	-0.3	114	111	- 3	307[a]	308	+ 1	361[a]	372	+11
174866	W.F.	6/23/57	1	43.4	42.6	-0.8	12.8	12.4	-0.4	111	112	+ 1	306	307	+ 1	366[a]	375	+ 9
174867	W.F.	6/23/57	2	42.6	42.5	-0.1	11.8	12.0	+0.2	117	114	- 3	279	304	+25	353[a]	373	+20
175047	W.F.	7/11/57	1	44.0	43.6	-0.4	12.4	12.3	-0.1	121	117	- 4	325	328	+ 3	380[a]	364	-16
175048	W.F.	7/12/57	2	43.0	43.1	+0.1	12.1	12.1	0.0	110	119	+ 9	315	313	- 2	366[a]	394	+28
175110	W.F.	7/19/57	2	43.9	43.0	-0.9	12.4	12.2	-0.2	112	112	0	303	305	+ 2	350[a]	371	+21
175111	W.F.	7/19/57	2	43.7	42.8	-0.9	12.7	12.1	-0.6	113	114	+ 1	291	302	+11	364[a]	368	+ 4
Current Mill Average:				43.3	42.8	-0.5	12.4	12.2	-0.2	114	114	0	302	313	+11	360	377	+17

[a]This average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

Note: All "current mill average" data are calculated from the totals of the individual readings.

COMPARISON OF INSTITUTE AND MILL DATA--JULY 1 THROUGH JULY 31, 1957 (continued)

TABLE XL

MILL P -- 42-LB. LINERBOARD

File No.	Finish	Date Made	Mch. No.	Basis Weight, lb.			Caliper, points			Bursting Strength, p.s.i. gage			Elmendorf Tear, g./sheet					
													In			Across		
				IPC	Mill	Diff.	IPC	Mill	Diff.	IPC	Mill	Diff.	IPC	Mill	Diff.	IPC	Mill	Diff.
174868	W.F.	6/20/57	1	43.8	43.5	-0.3	12.9	13.0	+0.1	115	111	- 4	297[a]	303	+ 6	335[a]	361	+26
174869	W.F.	6/24/57	1	44.0	44.5	+0.5	12.3	12.3	0.0	109	106	- 3	279	308	+29	356[a]	369	+13
174895	W.F.	6/26/57	1	44.3	43.7	-0.6	12.2	12.3	+0.1	110	111	+ 1	284	317	+33	341[a]	372	+31
175046	W.F.	7/ 9/57	1	44.2	44.3	+0.1	12.4	12.6	+0.2	108	109	+ 1	290[a]	310	+20	365[a]	369	+ 4
175099	W.F.	7/17/57	1	43.9	43.7	-0.2	12.8	13.0	+0.2	113	111	- 2	288	324	+36	349[a]	377	+28
Current Mill Average:				44.0	43.9	-0.1	12.5	12.6	+0.1	111	110	- 1	288	312	+24	349	370	+21

TABLE XLI

MILL Q -- 42-LB. LINERBOARD

174856	S.F.	6/24/57	7	42.0	42.4	+0.4	12.8	12.3	-0.5	101	107	+ 6	362[a]	335	-27	371[a]	363	- 8
174917	S.F.	7/ 2/57	7	43.2	43.0	-0.2	13.0	12.6	-0.4	106	105	- 1	356[a]	341	-15	373[a]	371	- 2
Current Mill Average:				42.6	42.7	+0.1	12.9	12.4	-0.5	104	106	+ 2	359	338	-21	372	367	- 5

[a]This average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

Note: All "current mill average" data are calculated from the totals of the individual readings.

COMPARISON OF INSTITUTE AND MILL DATA--JULY 1 THROUGH JULY 31, 1957 (continued)

TABLE XLII

MILL S -- 42-LB. LINERBOARD

File No.	Finish	Date Made	Mch. No.	Basis Weight, lb.			Caliper, points			Bursting Strength, p.s.i. gage			Elmendorf Tear, g./sheet In			Elmendorf Tear, g./sheet Across		
				IPC	Mill	Diff.	IPC	Mill	Diff.	IPC	Mill	Diff.	IPC	Mill	Diff.	IPC	Mill	Diff.
174862	W.F.	6/26/57	-	44.0	44.0	0.0	12.9	12.4	-0.5	118	106	-12	343[a]	352	+ 9	373[a]	403	+30
174863	W.F.	6/26/57	-	44.4	44.4	0.0	12.5	12.2	-0.3	116	109	- 7	348[a]	352	+ 4	393[a]	415	+22
174864	W.F.	6/27/57	-	44.2	44.9	+0.7	13.1	12.6	-0.5	118	111	- 7	353[a]	364	+11	382[a]	420	+38
174977	W.F.	7/ 1/57	-	44.1	44.4	+0.3	12.9	12.8	-0.1	115	108	- 7	389[a]	347	-42	396[a]	375	-21
174978	W.F.	7/ 2/57	-	42.2	43.2	+1.0	12.3	12.2	-0.1	114	110	- 4	334[a]	291	-43	363[a]	367	+ 4
175031	W.F.	7/11/57	-	44.9	45.2	+0.3	12.4	12.5	+0.1	123	114	- 9	359[a]	336	-23	393[a]	401	+ 8
175049	W.F.	7/19/57	-	42.6	43.0	+0.4	12.5	12.2	-0.3	117	109	- 8	360[a]	312	-48	381[a]	392	+11
175050	W.F.	7/19/57	-	43.7	44.2	+0.5	12.5	12.3	-0.2	119	113	- 6	353[a]	309	-44	381[a]	384	+ 3
175109	W.F.	7/20/57	-	44.2	44.3	+0.1	12.3	12.4	+0.1	117	104	-13	329	331	+ 2	377[a]	400	+23
Current Mill Average:				43.8	44.2	+0.4	12.6	12.4	-0.2	117	109	- 8	352	333	-19	382	395	+13

TABLE XLIII

MILL R -- 47-LB. DRUM LINERBOARD

No samples submitted.

[a]This average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

Note: All "current mill average" data are calculated from the totals of the individual readings.